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A METHOD FOR FORMING A STORAGE CELL CAPACITOR  
COMPATIBLE WITH HIGH DIELECTRIC CONSTANT MATERIALS

ABSTRACT

The invention is a storage cell capacitor having a storage node electrode comprising a barrier layer interposed between a conductive plug and an oxidation resistant layer. A thick insulative layer protects the sidewalls of the barrier layer during the deposition and anneal of a dielectric layer having a high dielectric constant.

The method comprises forming the conductive plug in a thick layer of insulative material such as oxide or oxide/nitride. The conductive plug is recessed from a planarized top surface of the thick insulative layer. The barrier layer is formed in the recess. The process is then continued with a formation of an oxidation resistant conductive layer and the patterning thereof to complete the formation of the storage node electrode.

Next a dielectric layer having a high dielectric constant is formed to overly the storage node electrode and a cell plate electrode is fabricated to overly the dielectric layer.

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